(No Model.)

R. NICOLAI.

PROCESS OF MANUFACTURING RELIEF MAPS.

No. 532,577. Patented Jan. 15, 1895.

Fig. 1.

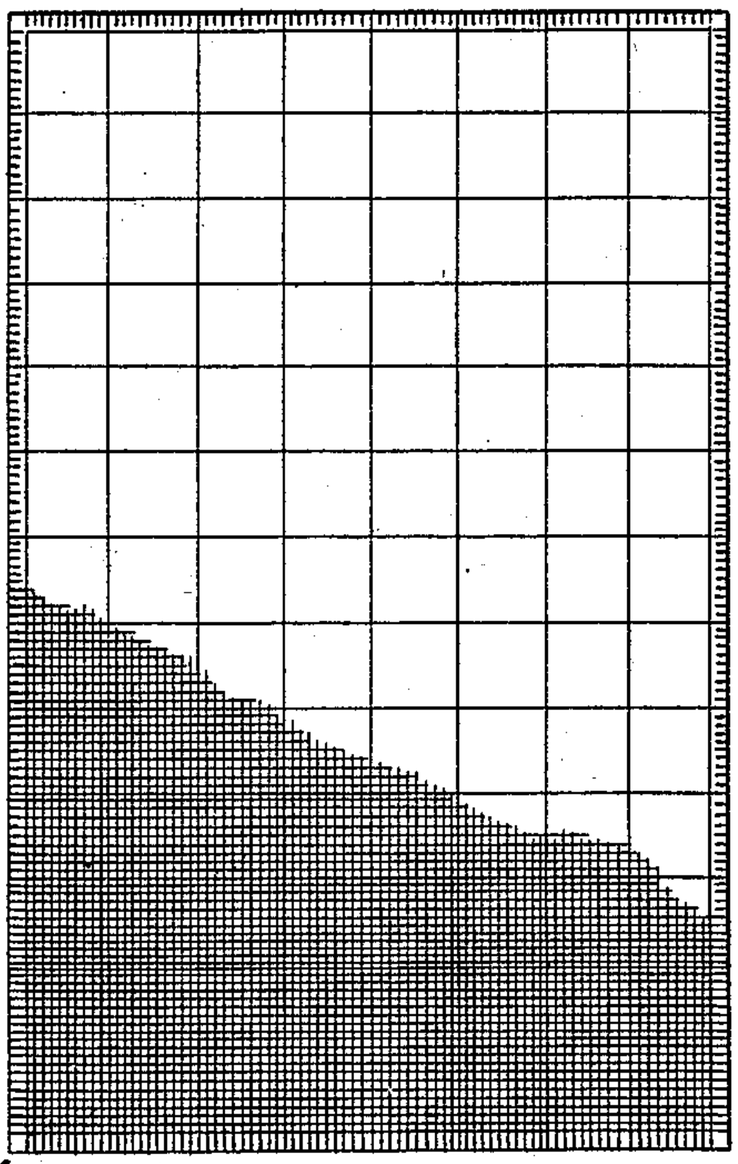


Fig. 2.

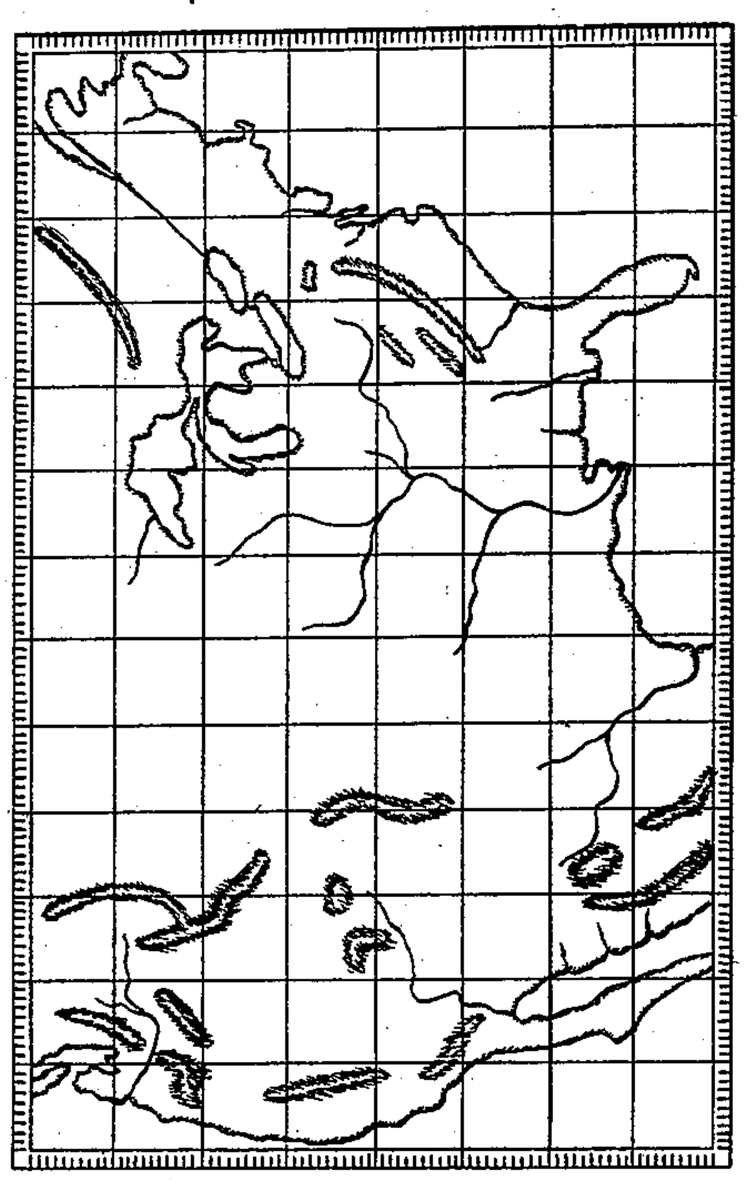


Fig. 3.

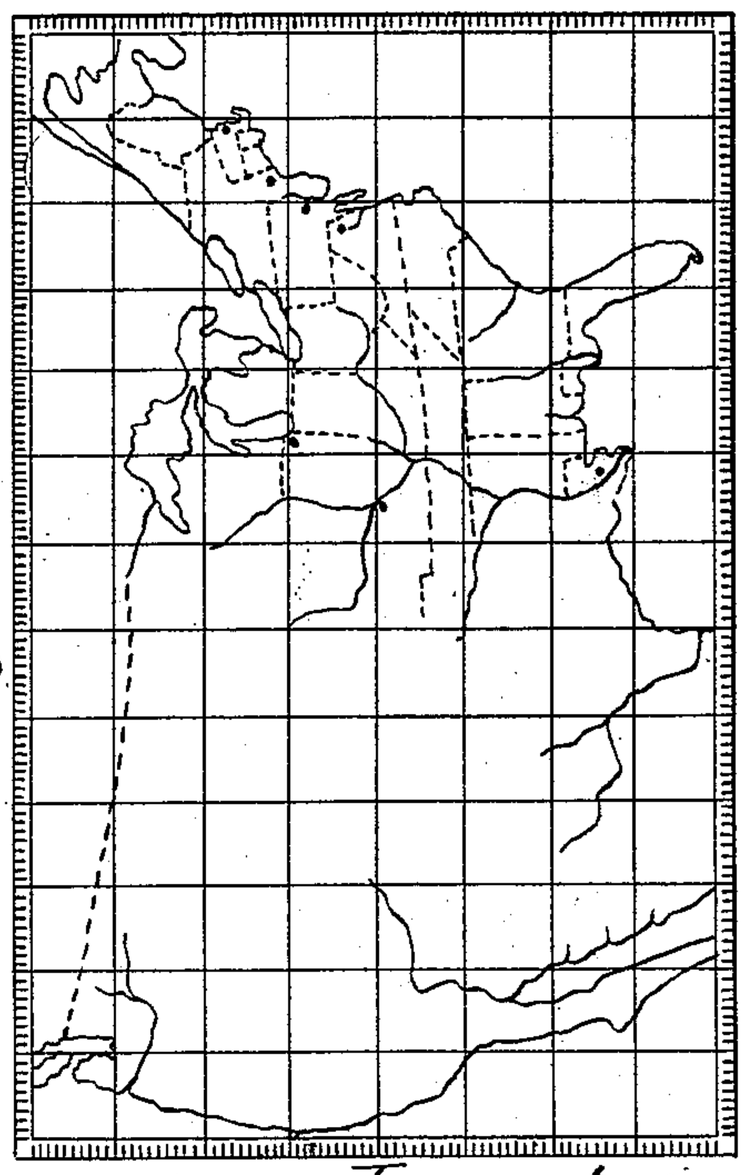
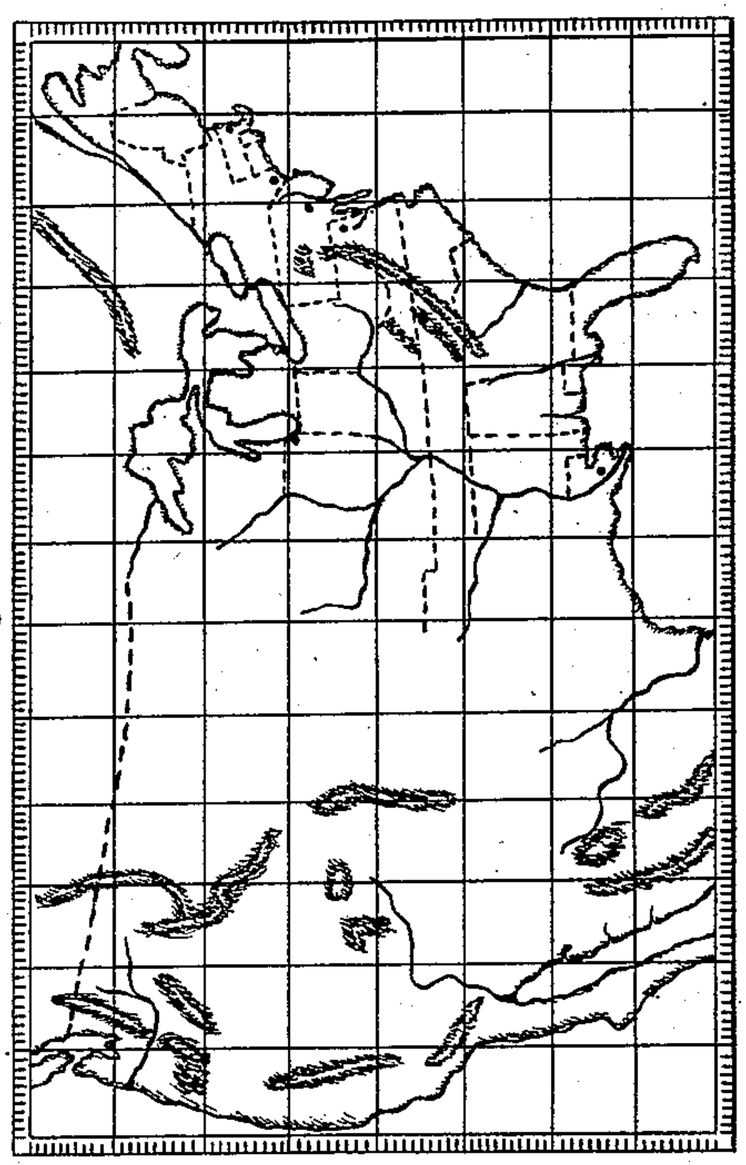


Fig. 4.



Witnesses.
E. T. Wray.
J. H. Coulter.

Inventor.
Richard Nicolai
by Francis W. Parker,
his Atty.

UNITED STATES PATENT OFFICE.

RICHARD NICOLAI, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CENTRAL SCHOOL SUPPLY HOUSE, OF SAME PLACE.

PROCESS OF MANUFACTURING RELIEF-MAPS.

SPECIFICATION forming part of Letters Patent No. 532,577, dated January 15, 1895.

Application filed November 6, 1894. Serial No. 528,033. (No specimens.)

To all whom it may concern:

Be it known that I, RICHARD NICOLAI, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in the Process of Manufacturing Relief-Maps, of which the following is a specification.

In my manufacture of relief maps I may employ any desired system or means for manufacturing or producing the dies between which the relief map is to be pressed into proper form. I prefer however to employ a system similar to that set out in the patent to Joseph E. Blanther, No. 473,901, patented May 3, 1892. My process or method of producing the complete contour maps in connection with such dies, I will now describe.

I first construct a map of the desired country, but a trifle larger in surface area or on a trifle larger scale than that relief map intended finally to be produced. This slightly enlarged map I now use as the means of producing a mold or die, that is to say, substantially as set out in the Blanther patent. I cut a series of contour pieces out of such maps which are a trifle larger than the desired relief map, and by means of these pieces build up so as to have the means of producing the dies. These dies I produce in any desired manner and I make them of any desired material, as for example, the female die may be of copper bronze and the male die of white metal. I now begin my process proper.

I take a suitable sheet of paper, parchment or other substance of the same quality as that on which the map is to be printed, and preferably rule the same. I may for example as indicated in Fig. 1, rule it by heavy lines crossing each other at right angles, the same being say one inch apart. Between these heavy lines I may rule a series of intermediate light lines, say ten to an inch. This sheet of paper so ruled is then reliefed, having first been properly registered, between the two dies. I now use this ruled, reliefed paper as a means of obtaining particularly the water contour lines, as for example the river courses, lake shores, ocean borders and the like. This work is put upon the reliefed paper by hand, the rivers being placed in their proper valleys, &c. If desired, though this is not always necessary, the political divisions, cities, towns, railroads, State and national boundary lines and the like may at the same time be penciled or drawn in. The map so formed, but without the political lines, is indicated in Fig. 2. I now take another sheet of paper preferably ruled as before, and upon this flat sheet of paper I draw off a map, the water lines or contours being traced down on the map by means of a comparison between the squares or ruling lines on the reliefed, and on the flat map. This map so formed may have the political divisions put upon it if they have not been so placed on the reliefed map, by reference to the original map originally produced and from which the relief dies were made. This then gives me the form of map which I desire to use, and which if used upon the dies in question will produce a complete and proper relief map in which the printed outlines and indications will coincide with their appropriate physical outlines indicated on the relief. The rivers will lie in the valleys and not on the sides of the hills. The margin of the oceans, gulfs, lakes and the like, as indicated by the ink, will coincide with the boundaries of the land elevations as indicated by the relief. These maps are then suitably mounted and framed and are ready for use.

If, when the map so formed as indicated in Fig. 3, is placed between the molds or dies so as to be reliefed as indicated in Fig. 4, and if then it be found that there are any errors, they may be corrected as before by comparison with the squares.

It is evident that any rule or relation with regard to the squares can be employed, and in the case of simple maps it might not be necessary for a person with a trusty eye to use such squares.

Independent of the squares, the gist of the method consists in laying out the natural and more or less of the political outlines of the country on the reliefed form, and from such reliefed form with these elements so properly located, the map finally to be printed is produced. Of course this map, as for example the map shown in Fig. 3, would preferably be made with transfer ink or the like, and

would be transferred to a printing stone, or any convenient manner for reproducing the maps would be satisfactory.

Referring to the drawings, Figure 1 is a plan view of a piece of ruled paper. Fig. 2 is a view of the same when pressed into relief and the water outlines worked in. Fig. 3 is a sheet of flat paper to which the lines laid down on the relief have been transferred. Fig. 4 is a complete map reliefed after the printing has all been done.

I do not of course wish to be limited by the means for printing, and indeed considerable variations may be made in various ways from the method above laid down.

I claim—

1. The method of producing relief maps which consists in pressing map paper into relief and then tracing upon the reliefed paper certain outlines, as for example the water contour lines of the map, then from such relief map as a model, tracing the same lines back to the flat map or the printing stone or the like, then printing the completed maps, then pressing them into relief between the relief dies.

2. The method of producing relief maps which consists in pressing ruled map paper into relief and then tracing upon the reliefed paper certain outlines, as for example the water contour lines of the map, then from such relief map as a model, tracing the same lines back to the ruled flat map or the printing stone or the like, then printing the completed maps, then pressing them into relief between the relief dies.

Signed October 30, 1894.

RICHARD NICOLAI.

In presence of—
J. H. COULTER,
FRANCIS M. IRELAND.